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Randomized double-blind clinical trial examining the Ellagic acid effects on glycemic status, insulin resistance, antioxidant, and inflammatory factors in patients with type 2 diabetes

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Abstract

Oxidative stress can worsen glycemic status. Considering the antioxidant properties of Ellagic acid (EA), this study was designed to evaluate the effect of EA on glycemic indices, lipid profile, oxidative stress, and inflammation status in type 2 diabetic patients. Overall, 44 patients were recruited and were randomly allocated consumed 180 mg of EA per day (n = 22) or placebo (n = 22) for 8 weeks. The blood sugar (BS), insulin, insulin resistance (IR), hemoglobin A1c (HbA1c), total cholesterol (TC), triglycerides (TG), low-density lipoprotein (LDL), high-density lipoprotein (HDL), total antioxidant capacity (TAC), malondialdehyde (MDA), the activity of glutathione peroxidase (GPx) and superoxide dismutase (SOD), C-reactive protein (CRP), TNF-α and interleukin 6 (IL-6) were measured at the beginning and end of the study. At the end of the study, the mean of BS, insulin, IR, HbA1c, TC, TG, LDL, MDA, CRP, TNF-α, and IL-6 were significantly decreased in the intervention group ($p < .05$). Also, the mean of TAC (+0.8 ± 0.01) and activity of GPx (+10.26 ± 0.22) and SOD enzymes (+459.6 ± 9.76) significantly increased in the intervention group ($p < .05$). EA supplementation can be helpful as a diet supplement in patients with type 2 diabetes through improvement in chronic adverse effects.